Dear Cooperator:

During the period February 7-13, 1960, Herbert E. Blakemore, Entomologist, El Centro, California, and Howard E. Loret, Entomologist, Logan, Utah, conducted a beet leafhopper survey in the desert areas of southern Utah and Nevada, southeastern California and central Arizona. Their report follows:

BEET LEAFHOPPER CONDITIONS IN THE SOUTHERN DESERT AREAS OF SOUTHERN UTAH AND NEVADA, SOUTHEASTERN CALIFORNIA, AND CENTRAL ARIZONA - 1960

The beet leafhopper spring movement from the southern desert breeding areas to the cultivated districts of central Arizona and southwestern California is expected to be light; the movement to central and southern Utah and southern Nevada is expected to be light; and the movement to northern Utah and western Colorado is expected to be light. It should be emphasized, however, that this report concerns only the beet leafhopper populations present in the far southern desert breeding areas, and does not have reference to populations that may be in local breeding areas in northern and eastern Utah.

TIME OF MOVEMENT

It is to be understood that this statement is based on present conditions. Movement of the leafhopper into cultivated areas of central and southern Arizona and southeastern California is expected to start by late February to early March, movement to cultivated areas of southern Nevada and Utah is expected to start by late March to early April, and movement to central Utah and western Colorado is expected to start by late April. Weather conditions during the next two months will have a bearing on the amount of the leafhopper population that moves from the desert areas to cultivated districts.

SOUTHERN DESERT BREEDING GROUND CONDITIONS

Beet leafhopper movement is expected to be light this year. Plant cover at present is favorable for leafhopper buildup in the southern desert but leafhopper populations are low over most of this area, possibly due to prolonged drought conditions in the fall which may have caused considerable mortality among the overwintering leafhopper population before the annual desert host plants were germinated by rains occurring the first part of November and first December. Host plants were found at 113 of the 211 stops made, or in about 53% of the 50,000 square mile area represented in the survey. In the 26,500 square mile area where host plants were present at the time of the February survey, the population averaged 0.014 leafhoppers per square foot this season, in comparison with 0.05 leafhoppers per square foot where 5,000 square miles had host plants in 1959, and with 0.66 leafhoppers per square foot where 35,000 square miles had host plants in 1958. It will be necessary to check

the southern desert area later in the season in order to determine possible leafhopper movement from desert areas in northern Mexico across the borders of Arizona and California. However, during the February survey this season the beet leafhopper populations averaged 0.17 per square foot north of the 34 degree parallel and 0.11 per square foot in the portion of the area south of this line, at the stops checked.

VIRULIFEROUS CONTENT OF THE LEAFHOPPERS

Leafhoppers from representative stops in the area checked during the February survey have been caged on susceptible beet plants but test readings will not be available until a later date.

SUMMARY

The estimated beet leafhopper population in the southern desert areas is about 8.6 billion in comparison with about 3.0 billion in 1959 and 5.3 billion in 1957, the latter two years in which light leafhopper movement occurred into cultivated areas of Utah and western Colorado, resulting in only light curly-top damage to susceptible crops.

LIFE HISTORY OF LEAFHOPPER*

In order to promote a more complete understanding of this statement, the following pertinent information about the habits of the beet leafhopper during the period of the year covered by this statement and the statement to follow is appended.

> "The beet leafhopper is more or less of a desert insect. Its preferred environment is one of annual succulent plants growing in an area of high temperatures and low humidities. All stages, except the adult females, usually die during the fall or early winter.
>
> "In the far southern portion of the southern breeding grounds the first generation matures by late January or early February. The leafhoppers from the early broods shift to more succulent host plants in the breeding grounds or to the north where plants are not so far advanced as at the lower elevations. Two or three broods may develop with a movement after each has matured."

* The above statements concerning the life history of the beet leafhopper are taken from previous beet leafhopper statements issued by Mr. Howard E. Dorst

Yours very truly,

Jim R. Dutton.

Jim R. Dutton
Regional Supervisor

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
Plant Pest Control Division, Western Region
4173 MacArthur Boulevard
Oakland 19, California

Mar/Apr. 1960

April 18, 1960

Dear Cooperator:

The following statement is based on the accumulated information obtained as a result of two surveys - one made during the first two weeks in March, the second the first two weeks in April.

SECOND STATEMENT OF BEET LEAFHOPPER CONDITIONS IN THE SOUTHERN DESERT AREAS OF SOUTHERN UTAH AND NEVADA, SOUTHEASTERN CALIFORNIA AND CENTRAL ARIZONA -1960

Additional data have indicated further buildup of beet leafhopper populations in the southern desert breeding grounds to the extent that movement of leafhoppers to the cultivated districts of southern Nevada and Utah is expected to be light to moderate and the movement to eastern Utah and western Colorado is expected to be light to moderate. The movement to western Nevada is expected to be light and the movement to central and northern Utah will be light. The shift in population to cultivated districts of southeastern California and southern Arizona from adjacent desert areas started in March and will probably continue until mid-April and is light to moderate in magnitude. This statement covers movement of beet leafhoppers from only the southern desert breeding grounds to crop areas, and does not include populations that may have overwintered in the local breeding areas of northern and eastern Utah, western Colorado and western Nevada.

Approximately 2% of the overwintering beet leafhoppers collected in February for inoculation on test plants were found to be carrying the curly top virus. This gives an estimated population of 0.017 billion infective leafhoppers, of the 8.6 billion total overwintering population calculated to be present in the southern desert breeding area at the time of the February survey. The percentage of infective leafhoppers may have increased since, as it has been observed to do so in previous seasons as population densities increased.

Precipitation occurring in the southern desert breeding grounds during the first half of February and the first and latter parts of March has helped to sustain the host plants germinated by November and December rains, but few additional plants have been propagated in most areas.

The winter annual plants are drying or dead in many parts of the southern desert due to lack of sufficient moisture. This causes movement of beet leafhopper populations from those portions of the southern desert breeding grounds to other areas with more favorable host plant conditions: to adjacent desert areas with more succulent vegetation or to the north where plants are not so far advanced in development as at the lower

elevations, to cultivated districts, and to areas where Russian thistle and other summer weeds have germinated. Presence of the summer weed hosts in sufficient numbers may reduce the amount of long-range leafhopper dispersal into crop lands, particularly in northern and eastern Utah, western Colorado and western Nevada where these weeds may occur abundantly in seasons of favorable rainfall in local beet leafhopper breeding grounds close to agricultural areas.

*Correction: In the report released February 26, correction should be made in the last two lines under the heading "Southern Desert Breeding Ground Conditions." These two lines should read, "average 0.017 per square foot north of the 34 degree parallel and 0.011 per square foot south of this line at the stops checked." to correspond with the average figure of 0.014 beet leafhoppers per square foot for the total stops where widespread host plants were present, listed on line 10 under the same heading.

Yours very truly,

Wilfred Shockley

Wilfred Shockley
Acting in Charge